MECH 3007 THERMAL AND FLUID ENGINEERING

Credit Points 10

Legacy Code 300759

Coordinator Ming Zhao (https://directory.westernsydney.edu.au/search/name/Ming Zhao/)

Description The subject provides an understanding of thermo-fluid principles and their engineering applications related to career pathways in manufacturing, renewable energy, human health and the environment. In addition to examining theoretical principles, students' analytical skills are developed as they evaluate thermal and fluid systems and apply basic computational techniques to solve problems in practical laboratory sessions. Students will explore topics such as aerodynamics, hydrodynamics, turbomachinery, combustion, and ventilation to develop industry applicable, practical skills.

School Eng, Design & Built Env

Discipline Mechanical Engineering

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 3 subject

Pre-requisite(s) CIVL 2003 AND
MECH 3008

Assumed Knowledge

Fundamentals on Fluid Mechanics, Thermodynamics, and Heat Transfer.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Evaluate dynamics of fluid flow and solid body interaction.
2. Analyse mass and heat transfer in fluid flow.
3. Perform basic design and analysis of pumps and turbines.
4. Apply basic computational techniques in solving thermal and fluid engineering problems.
5. Integrate basic fluid engineering principles in industrial applications while in a team environment.

Subject Content

1. Aerodynamics and its impact
2. Turbomachinery
3. Wind engineering
4. Fluid-structure interaction
5. Combustion and compressible flow (introductory)

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Quiz	3 x 15-minute (per Quiz)	15	N	Individual
Practical	3 x Practical reports 1000 words (per report)	30	N	Individual
Participation	9 x 2-hour tutorials	5	N	Individual
Final Exam	2-hour	50	N	Individual

Teaching Periods

Sydney City Campus - Term 1 (2024)

Sydney City

On-site

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH3007_24-SC1_SC_1#subjects)

Spring (2024)

Penrith (Kingswood)

On-site

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH3007_24-SPR_KW_1#subjects)

Parramatta City - Macquarie St

On-site

Subject Contact Ming Zhao (https://directory.westernsydney.edu.au/search/name/Ming Zhao/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH3007_24-SPR_PC_1#subjects)

Sydney City Campus - Term 3 (2024)

Sydney City

On-site

Subject Contact Ming Zhao (https://directory.westernsydney.edu.au/search/name/Ming Zhao/)

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH3007_24-SC3_SC_1#subjects)